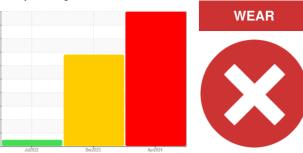


PROBLEM SUMMARY

Sample Rating Trend

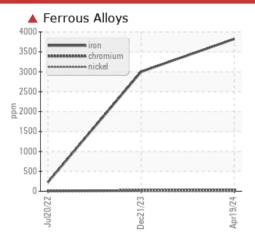


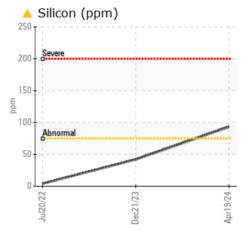
Machine Id **040-R0006**

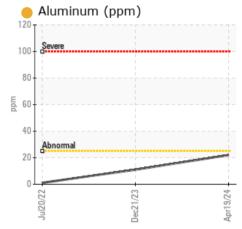
Component
Left Final Drive

SCHAEFFER SCHAEFFER 293 MOLY 75W90 (2 QTS)

COMPONENT CONDITION SUMMARY







RECOMMENDATION

We advise that you check all areas where dirt can enter the system. The oil change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS								
Sample Status				SEVERE	SEVERE	NORMAL		
Iron	ppm	ASTM D5185m	>500	▲ 3824	▲ 2999	225		
Chromium	ppm	ASTM D5185m	>10	4 36	<u> </u>	2		
Silicon	ppm	ASTM D5185m	>75	4 93	42	4		

Customer Id: AECCHATN Sample No.: WC0903845 Lab Number: 06159497 Test Package: CONST



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 jhester@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS						
Action Inspect Wear Source	Status	Date	Done By	Description We advise that you inspect for the source(s) of wear.		
Resample			?	We recommend an early resample to monitor this condition.		
Check Dirt Access			?	We advise that you check all areas where dirt can enter the system.		

HISTORICAL DIAGNOSIS

21 Dec 2023 Diag: Jonathan Hester

WEAR

We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. Gear wear is indicated. There is no indication of any contamination in the oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.



20 Jul 2022 Diag: Don Baldridge



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

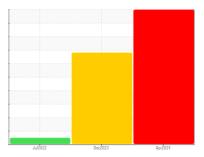






OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id

040-R0006Component

Component
Left Final Drive

SCHAEFFER SCHAEFFER 293 MOLY 75W90 (2 QTS)

DIAGNOSIS

▲ Recommendation

We advise that you check all areas where dirt can enter the system. The oil change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

▲ Wear

Gear wear is indicated.

Contamination

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

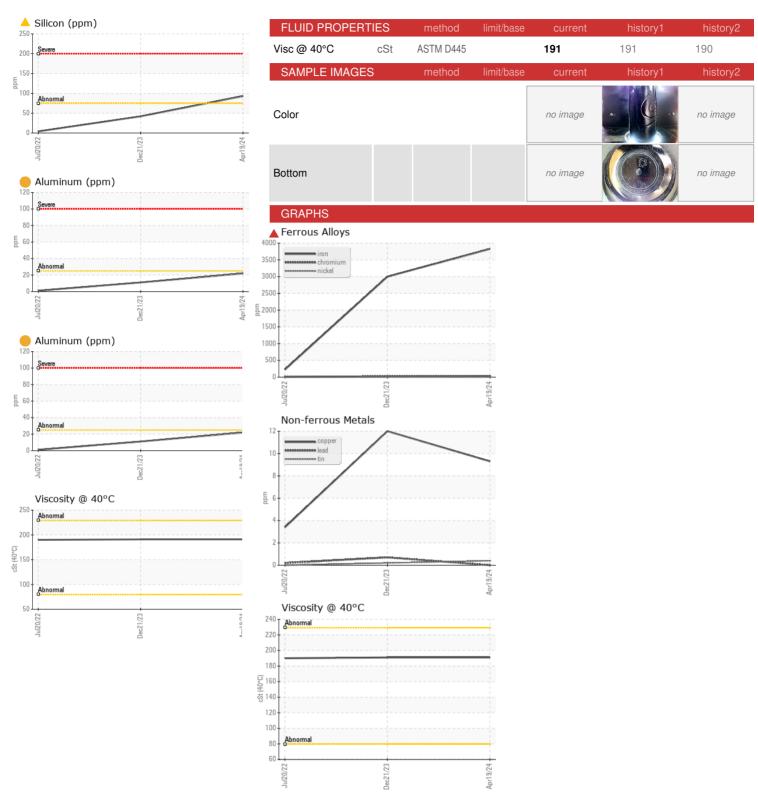
Fluid Condition

The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION method limit/base current history1 history2	90 (2 Q I S)		Ju	2022	Dec2023 Apr20	024	
Sample Date Client Info 6945 6459 2244	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 19 Apr 2024 21 Dec 2023 20 Jul 2022 Machine Age hrs Client Info 6841 0 0 Oil Changed hrs Client Info 6631 0 0 Oil Changed Client Info Changed Not Changd Not Changd Sample Status Total Changed Not Changed Astage Astage Astage Not	Sample Number		Client Info		WC0903845	WC0868435	WC0698080
Machine Age hrs Client Info 6945 6459 2244 Oil Age hrs Client Info 6631 0 0 Not Changd COID Changed Sample Status Client Info Changed Not Changd Not Changd CONTAMINATION method limit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50.0 A 3824 2999 225 Chromium ppm ASTM D5185m >10 1 2 0 Nickel ppm ASTM D5185m >10 1 2 0 Aluminum ppm ASTM D5185m >25 22 11 1 Lead ppm ASTM D5185m >50 9 12 3 Aluminum ppm ASTM D5185m >50 9 12 3 Tin ppm ASTM D5185m >50			Client Info		19 Apr 2024	21 Dec 2023	20 Jul 2022
Oil Changed Sample Status Client Info Changed SEVERE Not Changd Not Changd SEVERE Not Changd NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >500 \$ 3824 \$ 2999 225 Chromium ppm ASTM D5185m >10 \$ 36 \$ 24 2 Nickel ppm ASTM D5185m >10 \$ 1 2 0 Allwinium ppm ASTM D5185m \$ 25 \$ 22 1 0 Allwinium ppm ASTM D5185m \$ 25 \$ 22 1 1 Lead ppm ASTM D5185m \$ 25 \$ 9 12 3 Tin ppm ASTM D5185m \$ 1 < 1	•	hrs			-	6459	
Oil Changed Sample Status Client Info Changed SEVERE Not Changd SEVERE Not Changd NORMAL CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5186m >500 \$ 3824 \$ 2999 225 Chromium ppm ASTM D5186m >10 \$ 36 \$ 24 2 Nickel ppm ASTM D5186m >10 \$ 1 2 0 Nickel ppm ASTM D5186m >25 \$ 22 \$ 1 0 Aluminum ppm ASTM D5186m >25 \$ 22 \$ 1 1 Lead ppm ASTM D5186m >25 \$ 22 \$ 1 < 1 Lead ppm ASTM D5186m >1 < 1 < 1 < 1 Copper ppm ASTM D5186m > 1	<u> </u>	hrs	Client Info			0	0
Sample Status	-				Changed	Not Changd	Not Changd
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >500 3824 2999 225 Chromium ppm ASTM D5185m >10 1 2 0 Nickel ppm ASTM D5185m >10 1 2 0 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 25 0 <1	-				_	Ü	
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >500 ▲ 3824 ▲ 29999 225 Chromium ppm ASTM D5185m >10 ▲ 36 ▲ 24 2 Nickel ppm ASTM D5185m >10 1 2 0 Titanium ppm ASTM D5185m >10 0 0 0 Aluminum ppm ASTM D5185m 25 22 11 1 1 Lead ppm ASTM D5185m >25 0 <1 <1 0 0 0 0 0 1 <1 0 0 1 <1 <1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1	CONTAMINATION	١	method	limit/base	current	history1	history2
Iron	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium ppm ASTM D5185m >10 ▲ 36 ▲ 24 2 Nickel ppm ASTM D5185m >10 1 2 0 Tittanium ppm ASTM D5185m 2 1 0 Silver ppm ASTM D5185m 2 1 0 Aluminum ppm ASTM D5185m >25 0 <1 <1 Lead ppm ASTM D5185m >50 9 12 3 Copper ppm ASTM D5185m >50 9 12 3 Tin ppm ASTM D5185m >10 <1 <1 0 Vanadium ppm ASTM D5185m >10 <1 <1 0 Cadmium ppm ASTM D5185m <1 <1 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 73 44 234 Barium	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>500	▲ 3824	2999	225
Titanium ppm ASTM D5185m 2 1 0 Silver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m >25 22 11 1 Lead ppm ASTM D5185m >25 0 <1	Chromium	ppm	ASTM D5185m	>10	▲ 36	<u>^</u> 24	2
Stilver	Nickel	ppm	ASTM D5185m	>10	1	2	0
Aluminum	Titanium	ppm	ASTM D5185m		2	1	0
Lead ppm ASTM D5185m >25 0 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >50 9 12 3 Tin ppm ASTM D5185m >10 <1 <1 0 Vanadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m <1 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 73 44 234 Barium ppm ASTM D5185m 10 8 6 Molybdenum ppm ASTM D5185m 0 <1 3 Magnesium ppm ASTM D5185m 26 19 2 Magnesium ppm ASTM D5185m 218 114 6 Phosphorus ppm ASTM D5185m 1284 1182 1469 Zinc ppm ASTM D5185m 93 73 26 Sulfur ppm ASTM D5185m 29166 24822	Aluminum	ppm	ASTM D5185m	>25	<u>22</u>	11	1
Tin ppm ASTM D5185m >10 <1	Lead	ppm	ASTM D5185m	>25	0	<1	<1
Vanadium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>50	9	12	3
Cadmium ppm ASTM D5185m <1	Tin	ppm	ASTM D5185m	>10	<1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron	Cadmium	ppm	ASTM D5185m		<1	<1	0
Barium ppm ASTM D5185m 10 8 6 Molybdenum ppm ASTM D5185m 0 <1 3 Manganese ppm ASTM D5185m 26 19 2 Magnesium ppm ASTM D5185m 16 10 <1 Calcium ppm ASTM D5185m 218 114 6 Phosphorus ppm ASTM D5185m 1284 1182 1469 Zinc ppm ASTM D5185m 93 73 26 Sulfur ppm ASTM D5185m 29166 24822 27693 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >75 93 42 4 Sodium ppm ASTM D5185m >20 36 23 3 VISUAL method limit/base current history1 history2 White Metal	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m		73	44	234
Manganese ppm ASTM D5185m 26 19 2 Magnesium ppm ASTM D5185m 16 10 <1 Calcium ppm ASTM D5185m 218 114 6 Phosphorus ppm ASTM D5185m 1284 1182 1469 Zinc ppm ASTM D5185m 93 73 26 Sulfur ppm ASTM D5185m 29166 24822 27693 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >75 ▲ 93 42 4 Sodium ppm ASTM D5185m >20 36 23 3 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE Yellow Metal	Barium	ppm	ASTM D5185m		10	8	6
Magnesium ppm ASTM D5185m 16 10 <1	Molybdenum	ppm	ASTM D5185m		0	<1	3
Calcium ppm ASTM D5185m 218 114 6 Phosphorus ppm ASTM D5185m 1284 1182 1469 Zinc ppm ASTM D5185m 93 73 26 Sulfur ppm ASTM D5185m 29166 24822 27693 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >75 ▲ 93 42 4 Sodium ppm ASTM D5185m >20 36 23 3 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE NONE NONE NONE NONE <	Manganese	ppm	ASTM D5185m		26	19	2
Phosphorus ppm ASTM D5185m 1284 1182 1469 Zinc ppm ASTM D5185m 93 73 26 Sulfur ppm ASTM D5185m 29166 24822 27693 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >75 ▲ 93 42 4 Sodium ppm ASTM D5185m >20 36 23 3 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE	Magnesium	ppm	ASTM D5185m		16	10	<1
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Sulfur ppm ASTM D5185m 29166 24822 27693 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >75 ▲ 93 42 4 Sodium ppm ASTM D5185m 28 21 4 Potassium ppm ASTM D5185m >20 36 23 3 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE	Phosphorus	ppm	ASTM D5185m		1284	1182	1469
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >75	Zinc	ppm	ASTM D5185m		93	73	26
Silicon ppm ASTM D5185m >75 ▲ 93 42 4 Sodium ppm ASTM D5185m 28 21 4 Potassium ppm ASTM D5185m >20 36 23 3 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Debris scalar *Visual NORML NORML NORML NORML Sand/Dirt scalar *Visual NORML NORML NORML NORML Debris scalar *Visual NORML Debris scalar *Visual NORML Debris scalar *Visual NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG	Sulfur	ppm	ASTM D5185m		29166	24822	27693
Sodium ppm ASTM D5185m 28 21 4 Potassium ppm ASTM D5185m >20 36 23 3 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML	CONTAMINANTS		method	limit/base	current	history1	history2
PotassiumppmASTM D5185m>2036233VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONENONENONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGFree Waterscalar*VisualNEGNEGNEG	Silicon	ppm	ASTM D5185m	>75	93	42	4
VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG	Sodium	ppm	ASTM D5185m		28	21	4
White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG	Potassium	ppm	ASTM D5185m	>20	36	23	3
Yellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGFree Waterscalar*VisualNEGNEGNEG	VISUAL		method	limit/base	current	history1	history2
Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NEG NEG NEG	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NORML NOR	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGFree Waterscalar*VisualNEGNEGNEG	Silt	scalar	*Visual	NONE	NONE	NONE	
Appearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGFree Waterscalar*VisualNEGNEGNEG	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Free Water scalar *Visual NEG NEG NEG	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		scalar	*Visual		NEG	NEG	



OIL ANALYSIS REPORT







Certificate 12367

Laboratory Sample No. : WC0903845 Lab Number : 06159497 Unique Number : 10994920 Test Package : CONST

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 24 Apr 2024 **Tested** : 25 Apr 2024

Diagnosed : 26 Apr 2024 - Jonathan Hester

To discuss this sample report, contact Customer Service at 1-800-237-1369.

US 37415 Contact: DANIEL LISELLA daniel.lisella@shimmick.com T:

SHIMMICK CONSTRUCTION

5535 TRAILHEAD DRIVE

CHATTANOOGA, TN

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

F: